ments; but the exact nature of this connection is at present very obscure. One thing may be at least affirmed, that these cerebral spots are not motor centres in the sense that the co-ordination of the movements takes place in them; for we have seen that the most complete co-ordination obtains in the total absence of the cerebral hemispheres. If there is any real connection between the movements and the gray matter of the convolutions, it must be because the latter has direct relations with the co-ordinating mechanisms placed lower down in the brain. It seems *à priori* unlikely that such valuable material as we must needs suppose the gray matter of the convolutions to be, should be taken up in such, so to speak, menial work as bending or straightening a limb; and the results of subsequent observers have largely diminished the value which was at first attached to Hitzig's observations."

Dr. Foster endeavours to substantiate the above conclusion by a running account of the recent researches of Hermann, Sanderson, Nothnagel, Carville and Duret, and Goltz. He considers the recent observation of Goltz on dogs, to offer most serious objections to the theory of superficial cerebral centres, in any of the forms in which it has as yet been brought forward. These experiments were published in *Pflüger's Archiv*, xiii. (1876), and form one of the most valuable of the recent contributions to cerebral physiology.

We have, perhaps, already sufficiently alluded to the unsatisfactory treatment of "The Tissues and Mechanism of Reproduction," which form the subject-matter of the fourth Book. Under the circumstances, we think the student had a right to expect a fuller exposition of this important branch of physiology from Dr. Foster.

An appendix of fifty-three pages, presenting the chemical features of the more important constituents of the organism, closes the volume.

In conclusion, we can only repeat that Dr. Foster has presented the profession with a text-book on physiology both pleasant in style and trustworthy in exposition. While, in our opinion, in the interest of the student it could be improved in certain directions, some of which have been pointed out in the body of this review, we can confidently recommend it as a faithful exponent of the fundamental principles of that science which underlies all rational medicine. W. J. C.

ART. XXI.—*Clinical Lectures on Diseases of the Heart and Aorta.* By GEO. WILLIAM BALFOUR, M.D., St. And., F.R.C.P. Ed., Physician to, and Lecturer on Medicine in, the Royal Infirmary, Edinburgh. 8vo. pp. xvi., 428. London: J. & A. Churchill, 1876.

"OF making books there is no end," and it were but a simple matter for one who holds a smooth pen, and has a happy knack at construction, to build a new book, at short notice, on any medical subject, with the timbers of other men's hewing. Probably there are too many such books. Possibly they bring patients to the compilers, who, by attaching their own names to stolen wares, advertise themselves. Let us hope not; but, in view of the many compilations which empty the purse and lumber the shelf, it is refreshing to read Balfour's Lectures. At the very outset the book bears the stamp of originality, and the reader soon assures himself that Balfour is a thinker and a worker, and that he has written down what he has himself discovered, learned, and proven. It is a treatise on cardiac diseases written *de novo*. We enter upon the subject-matter of the book with enjoyable zest as we learn from the preface that the illustrations were taken by Dr. B. "mainly from patients who have passed from the clinic into the domain of morbid anatomy;" the advantage of which "is the definite connection of certain distinct *pre-mortem* phenomena with equally well-defined *post-mortem* appearances." He tells us that these lectures comprise the essence of his teaching in regard to their subject during the past eight years, and that by publishing this in lecture form, he has been able to avoid any special subject which has not happened to come under his own observation. Many of these lectures have already appeared in the *Edinburgh Medical Journal*, but in the book are several new subjects in reference to which we take the liberty to quote the following from a letter received from Dr. Balfour in 1875:—

"The new chapters are on Tricuspid Regurgitation; The Murmurs Audible in the Pulmonary Area; Vanishing Murmurs; Irregular Action; Secondary Results of Cardiac Disease; Peri- and Myo-carditis; Angina Pectoris and Fatty Degeneration; Treatment of Cardiac Disease in general; besides two new lectures on Diagnosis and Treatment of Aneurism. I think you will find the new matter quite as interesting, and, in some respects, as fresh as that already published. It contains the results of thirty years' practice, and is not, therefore, penned in haste."

The latter sentence lends additional value to the book.

In his preface Balfour gives a brief but interesting sketch of the progress of cardiac diagnosis, mentioning the leading writers on cardiac disease from the days of Harvey down to our own time, and completing the review by giving deserved praise to a book which has received but too little notice on this side of the water, viz.: "The admirable compendium of Von Dusch (1868), which has, in my opinion, no equal in any language as a practical exposition of the art of diagnosing diseases of the heart."

Lecture I. treats of "The Diagnosis of Cardiac Diseases generally, with reference to the Symptoms and Physical Signs," and presents familiar topics in such attractive garb that they seem new; besides much new matter outlined with great clearness. Significant of the broad and practical character of the whole book is the initial sentence: "In gathering together the prominent facts in relation to the circulatory system in any case, few things are more striking than the frequently apparent irrelevance of the symptoms in those who are otherwise ascertained to be examples of severe cardiac disease, if we perhaps except the equally remarkable fact that cardiac symptoms are frequently complained of where no cardiac disease exists."

We are glad to find nearly two pages devoted to the information to be derived from the pulse of cardiac cases when the patient's arm is elevated. In certain cases this is a useful means of diagnosis which is not made prominent, or is left unmentioned, in other works on the heart. The author, however, does not mention the pulse of aortic stenosis, and we think but few fingers have such fine tactile sense as to be able to diagnosticate coexisting mitral and aortic regurgitation by means of the pulse.

Under "Inspection" may be found new and valuable information in relation to visible venous, arterial, epigastric, and hepatic pulsation. Balfour makes a most refined use of palpation, for by its means he detects, or supposes, dilatation, or hypertrophy from the character of the cardiac pulsations. When he reaches the subject of percussion, our author, quite in opposition to the majority of diagnosticians, makes the assertion that "if we set about it in the right way, and correctly interpret its indications of the condition of the heart, percussion is one of the easiest of the problems to be found in this method of diagnosis."

More positive in character, showing too his self-reliance and independence of commonly received opinions, is Dr. Balfour's assertion that the so-called superficial dulness of the heart has *no value whatever* in estimating the size of that organ. "We must have recourse to mapping out the entire area of cardiac dulness both superficial and deep, to use for the nonce the anatomical terms so constantly applied to the acoustic phenomena."

The directions for percussing are clear and valuable, but in the interesting explanation of the intensity, pitch, and clang or *timbre* of the acoustic phenomena, the author goes beyond the depth of those whose ears are not sufficiently sensitive to be appreciative of "over-tones," "harmonics," and "sound-waves."

We are pleased to learn that Balfour considers the finger and Wintrich hammer as the most useful combination in percussion, for we proved their superiority several years ago. The finger is undoubtedly the best pleximeter, and we contend that with the hammer a clearer tone can be produced with less striking force and less subjective pain than by any use of finger-tips. Balfour does not make allusion to the "palpatory percussion" of the Germans. This is accomplished by grasping the handle close to the head of the hammer, on the back of which is laid the pulp side of the index finger. Thus held, the hammer can be made to strike a most delicate yet decided blow; and differences in pitch can be elicited which it is impossible to produce in any other way.

Alluding to the absurdity of Piorry and his followers in attempting to isolate aortic dulness from that of the heart, the lecturer passes on to *auscultation*, and in vivid terms most lucidly sets forth its revelations. As to the mooted cause of the first sound, he takes the sensible view that it is due to the closure of the auriculo-ventricular valves; but we more than suspect that his unmodified declaration that an accentuated second aortic sound is *invariably* caused by dilatation of the aorta, will meet with scepticism.

In connection with the subject of reduplication of cardiac sounds, we regret to find no allusion to unequal innervation, and the consequent unsymmetrical contraction of the two ventricles as a cause of asynchronous closure of the arterial valves. The lecturer is equally silent in reference to the theory that irregular closure of the separate leaflets of one set of valves can cause reduplication of sounds. We should have been pleased to have read his views on these points.

On the subject of cardiac murmurs, Balfour will startle many of his readers by his blunt remark that, "of all the signs of cardiac disease, murmurs are those most usually confided in, and yet they are really those of *least value.*" And again: "No murmur, except the one referred to (pre-systolic), can ever be accepted as a definite sign of cardiac disease, ... for there is no royal road to diagnosis more than to anything else. That must be made as Opie mixed his colours—'with brains.'" We trust these crisp statements will awaken the minds of those who delight in the treacherous quicksands of a "snap diagnosis," to the value of inspection, palpation, and percussion, without whose primary and careful aid, Balfour would never consider a diagnosis more than half begun. He admits the occasional occurrence of the mitral diastolic, and considers the pre-systolic murmur a most valuable sign, since it never disappears, and cannot deceive. He likewise records the possibility of a diastolic tricuspid. This portion of the lecture is very original, and of great worth. While he accepts the Corrigan theory that intravascular murmurs are due to vibrations induced by eddies in the blood-current, and which are now known as "fluid-veins," he admits that the rationale of murmurs thus produced, and the manner in which they may be modified by varying circumstances, are problems yet undefined, but thinks that scientists will by-and-by make this fluid vein a principal source of diagnosis. To read and understand this chapter is no child's play, for every topic has received a strictly scientific handling. This is, perhaps, the most characteristic and closely packed chapter of the book, and hence the long notice we have given it.

Lectures II. and III. are upon "Incompetence of the Aortic Valves, and the Progress and Treatment of the Disease."

It is very noticeable that Balfour, under the term "incompetence of the aortic valves," includes both regurgitation and obstruction. Searching the index we find no mention of aortic stenosis, and in the body of the lectures only a by-the-way sort of allusion to this affection *per se*. Indeed Balfour says (p. 46) that "the same cause which is capable of producing a liquid vein at the aortic orifice during the diastole of the heart, must be equally potent during its systole." Hence, probably, his omission of a distinct section in relation to this form of aortic disease. But we do not believe it by any means follows that because aortic regurgitation exists there must necessarily be obstruction, nor *vice versa*. Having accepted as fact the theory that all cardiac or vascular murmurs are due to fluid veins, Dr. B. makes constant use of the phrase "fluid veins." This will make the lectures less easy reading to those to whom the term and its meaning are new.

Aortic diseases are illustrated by three varieties of cases, the analysis of whose phenomena leads the lecturer into a discussion of points which are never very clear, viz., the irregular conduction of diastolic murmurs, the cause of sounds (he calls them murmurs) heard over the arteries, the effect of hydrostatic pressure, etc. The author's opinions are given with such lucidity and decision that we can never mistake his meaning. Without being dogmatic, he differs from other writers with marked resolution. In discussing the cause of arterial sounds, he agrees with Traube in his theory that the systolic sound is due to sudden tension of the arterial parietes. But in regard to Traube's opinion that the diastolic sound is caused by the sudden relaxation of the arterial coats, he is wholly sceptical. He coincides with Duroziez in the belief that this sound can only be created *artificially*. Contrary again to the majority, he does not consider these sounds of importance in the diagnosis of aortic incompetence. If he mean that this phenomenon is not necessary to establish a diagnosis, we can agree with him, but we cannot afford to discard a single evidence of cardiac disease. The position of the patient in aortic disease and its influence upon hydrostatic pressure of the aortic blood-column is made a prominent feature in treatment, and should be carefully studied. The pages devoted to the prognosis and termination of the disease contain new information, and are especially important. The value of digitalis in cardiac lesions is perhaps more intelligently shown by Balfour than by any preceding writer. By its means he has won brilliant results, and his boldness in its administration indicates that the common fear of over-use of this priceless remedy is misplaced. In giving it, his rule is to watch the urine rather than the pulse, and when the daily quantity begins to lessen he then begins to watch the pulse, and if it falter he lays aside the drug until the constitutional effect has disappeared. He considers the tincture the most reliable form of digitalis. He has the firmest faith in the restoration of ruptured compensation by appropriate management. The remarks on pulse tracings are valuable, but Balfour considers the sphygmograph of little practical worth "except in so far as it shows regularity or irregularity of the pulse, because by no form of instrument thus far invented, can we insure that the pressure on the artery shall always be the same." He thinks the relation of events in an artery to the cardiac rhythm can be determined only by the aid of electricity. In describing the sequelæ of lesions of the aortic orifice, embolism and cerebral hemorrhage are not mentioned.

As to prognosis Balfour regards the probability of life greatly in favour of a mitral affection, because aortic incompetence is always accompanied by serious valvular lesion. On the other hand, we recall the remark of Bamberger (*Herzkrankheiten* s. 284): "Of all possible valvular affections, insufficiency in connection with a moderate stenosis of the aortic valves may be regarded as the most favourable and as promising the longest duration of life."

In Lectures IV. and V. we have a gallant and intelligent defence of the pre-systolic murmur, the existence of which has of late been so frequently denied by certain English physicians. Balfour begins with the remark that a systolic murmur, loudest at the apex, and which by the large proportion of medical men is believed to be the sign most distinctive of disease at the mitral valves, is far from being a reliable sign, because such a murmur may be only temporary and non-significant of disease, while the pre-systolic murmur can never deceive and rarely disappears. He regards the common term pre-systolic a misnomer, and follows Gairdner in calling the murmur auriculo-systolic. In diagnosticating this affection, in addition to the significance of irregular pulse, he lays greatest stress upon the rhythm of the murmur. Unless we find that the pulsations of the carotid are subsequent to the murmur, we are apt to be deceived, and he criticizes Flint[1] for a lack of precision in this respect, which led him to describe as pre-systolic, murmurs which must have been diastolic in rhythm. This occurred in three cases in which Flint diagnosticated the pre-systolic murmur during life; but in which post-mortem the aortic orifice was found to be diseased, the mitral orifice healthy. Our attention is also directed to reduplication of the second pulmonic sound as being not only significant of mitral stenosis, but as a phenomenon of considerable importance in obscure cases. A case is quoted in which there was absence of the murmur, the diagnosis, as proved post-mortem, being correctly based upon this reduplication of the second pulmonic sound. Another pathognomonic symptom is "the thumping character of the first sound, especially when accompanied by pre-systolic thrill." In these lectures is a readable account of the mechanism of the rare diastolic mitral murmur. In common with Von Dusch, Balfour considers congenital mitral stenosis as the probable result of intra-uterine endocarditis. One of the concluding remarks of Lecture V. is that "We *never* have mitral stenosis without regurgitation." In reference to the coexistence of these affections, Bamberger, Skoda, Flint, Gerhardt, Gutmann, Von Dusch, Stokes, etc., say they

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[1] Flint on the Heart, 1870, p. 207.

"almost always," or "generally," or "in most instances" occur together. So that Balfour stands alone in using the dogmatic term "*never.*" As to why we are able to produce comparative rehabilitation of the cardiac muscle more easily in certain cases of mitral stenosis than in others, he makes the interesting remark that he believes the answer to be especially found in the period of life at which the stenosis primarily occurred.

Lecture VI. is one of the most valuable of the book, and should be carefully read. It treats of curable mitral regurgitation, its causes, signs, and treatment. We cannot, however, accept the opening assertion that "the only unequivocal proof of disease of the mitral valve is the determination of the present or former existence of a pre-systolic murmur." This remark leads up to the key-note of the lecture, viz., that many systolic mitral murmurs are the effect of some other derangement than cardiac disease, are curable, and hence the physician must not be too ready to consider a mitral regurgitant murmur as pathognomonic of incurable cardiac disease. To an altered relation of the blood to its containing vein is ascribed the origin of the venous murmur in chlorosis, which of course is the chief cause of curable mitral regurgitation. The arterial bruits heard near the base of the heart in chlorosis are supposed by Marey to be due to diminution of arterial tension, which facilitates the production of sonorous veins at the arterial orifice. Balfour, we think, successfully disagrees with Marey upon this point, first, by proving that there is actually an increase rather than diminution of arterial tension; and secondly, by showing that the so-called arterial bruit is not to be heard over any artery whatsoever, but is strictly auricular in its source.

He accepts as true the theory of Naunyn that the systolic murmur of chlorosis, best heard in the pulmonary area, does not originate in the pulmonary artery, being most clearly heard exactly over the spot where the left auricular appendix comes up from behind just at the left of that artery. The auricle being dilated, Naunyn attributes the localization of the murmur in this vicinity to the fact that the regurgitated blood creates fluid veins whose vibrations are by conduction made louder at the point of impingement than at the place of origin. This is a valuable statement. We then find the interesting assertion that the same depravation of blood and consequent relaxation of cardiac muscular tissue, so marked in chlorosis and acute rheumatism, is even more exquisitely developed in chorea, and that hence the mitral murmur in the latter affection may be referred to the same cause as that to which we may refer the murmurs in the diseases just mentioned. The weakness of the cardiac muscle permits dilatation of the left ventricle. This condition pulls apart the cusps of the mitral valves and hence the regurgitation. We cure the latter by giving tone to the ventricle by digitalis, iron, and rest, digitalis being "paramountly requisite." Balfour advises that in these affections stimulants be avoided in young persons, and that they be used with caution, even in elderly individuals.

Lecture VII. treats of tricuspid regurgitation, curable and incurable. We find mention of four cases of this rare lesion, which have been treated in the Edinburgh Infirmary within ten years. Dr. Balfour regards hepatic pulsation which is retarded, and not synchronous with the cardiac systole, as an important diagnostic phenomenon in this lesion, more so, perhaps, than jugular regurgitation. Mitral stenosis is mentioned as the most frequent cause of this form of valvular lesion, dilatation of the right ventricle being antecedent to the regurgitation. "By treatment," says Balfour, "we may be able to re-habilitate the tricuspid valve, but unless we can also re-habilitate the mitral we gain only a temporary postponement of the end. Hence, prognosis in such a complication is grave. In treating these cases, whatever other remedy may be used, we must never omit digitalis."

In Lecture VIII. we find a most readable exposition of the causes and varieties of murmurs audible in the pulmonary area. There are two principal varieties: (*a*) Those which, as Naunyn teaches, are due to mitral regurgitation, the murmur being conducted to the cardiac base; (*b*) murmurs which probably have often been incorrectly diagnosticated, and which, according to Quincke, whose views are adopted by Balfour, are due to a flattening of the pulmonary artery in cases in which the left lung, from some cause, being retracted, the artery is compressed in systole against the chest wall. Hence, in a normal condition of the heart and vessels, a localized murmur which could not arise if the left lung interposed, as it normally does, between the pulmonary artery and the thoracic parietes. Murmurs thus caused disappear on deep fixed inspiration.

Another cause of murmurs in the pulmonary area is supposed by Quincke to be owing to mitral stenosis, in which the right ventricle is hypertrophied but not dilated, while the pulmonary artery is dilated. The murmur arises at the orifice of the artery from fluid veins which form as the blood passes through the comparatively narrow healthy opening into the dilated artery beyond. Case XXXIII. in this lecture will be found of rare interest, and the whole lecture a solution of some of the puzzling problems of the pulmonary area which is so fitly termed the "region of romance."

No portion of the book contains more valuable hints than does Lecture IX. It treats of the variation and vanishing of cardiac murmurs. Cases are cited in which murmurs appeared and disappeared, and which had led medical men of ability to form opposing opinions, because they relied chiefly upon the existence or non-existence of murmurs. As we have already seen, Balfour gives to murmurs a very low place in the train of diagnostic symptoms. He, therefore, reads a severe lesson to physicians who incline to magnify the value of the presence or absence of murmurs as a *sine qua non* to diagnosis. In the absence of any other evidence of cardiac lesion, or of any congestive pulmonary affection, "persistent accentuation of the second pulmonary sound," says Balfour, "may be accepted as a certain indication of a mitral lesion." Curiously enough, he nowhere mentions the fact that we frequently can call forth a murmur, otherwise mute, by requesting the patient to run up stairs, or walk quickly for a moment or two. The lecture on irregular and intermittent pulse, and on cardiac and aortic palpitation, presents very clearly the symptoms, causes, and treatment of these affections.

In his remarks upon the nervous systems of the heart, Balfour expresses doubt as to whether we have yet "sufficient information relative to the actual and reciprocal action of these two systems on the heart" [excito-motor and inhibitory], "to warrant their acceptance in the ordinary meaning with which their names are employed." This will surprise those who long ago accepted the views of modern physiologists in regard to these two forces of the heart. Balfour is evidently a good doubter, and this fact does not detract one jot from the worth of his book. But this last doubt is a heresy which might bring Traube out his grave.

Balfour mentions the fact, new to us, that so long as the fœtus remains *in utero* intermittent action of the heart is unknown. "Extremely irregular action of the heart is almost pathognomonic of mitral stenosis," says Balfour, and he accepts Elliotson's correction of Corvisart's opinion that great irregularity in force and frequency of the pulse is due to narrowing of the aortic orifice. Says Elliotson: "I do not recollect a pulse irregular in force and frequency in a single case of narrowing of the aortic orifice solely, while I know it is very common in narrowing of the mitral opening, though possibly not peculiar to it, nor indeed to narrowing of any opening." A noteworthy point is that in relation to the production of cerebral anæmia by weak heart. This occurs in cases in which the radial pulse ranges from 20 to 30 in the minute, not because the cardiac action is slow, but because many of the pulsations fail to reach the periphery. In such cases there is usually a gouty heart, but the pulse and head symptoms might easily lead the physician to consider the brain the source of their cause, while it is the heart which needs treatment. And nothing in such a contingency, according to Balfour, can take the place of digitalis. Much of this lecture is devoted to treatment, and wherever Balfour touches upon this topic he will be found original, and whatever he says is the result of wise judgment and rich experience. An entire lecture upon treatment occurs later in the book, hence we will here merely quote his remark that he has found that epigastric pulsation, dependent upon irritability of the abdominal aorta, will invariably yield to full doses of the bromide of potassium in some bitter infusion.

In Lecture XI. on secondary results of cardiac disease, there are so many shrewd hints, and so much fresh information, which we are tempted to quote, that we must refer readers to the pages themselves. We would call especial attention to remarks on embolism. Not the least interesting are the allusions to the secretion of urine as a most sensitive test in judging of the progress of heart disease. Diminution of the daily quantity of urine, depending as it does on defective arterial pressure, indicates a transference of that pressure to the venous system. A small amount of albumen in the urine, therefore, is an important sign of intravenous pressure in cardiac disease. A large quantity of albumen, especially when accompanied by tube-casts, would rather point to a renal affection.

In Lecture XII. we have Balfour's views on "Angina Pectoris, upon other forms of Cardiac Pain, and some remarks on Diagnosis of Fatty Heart." The latter subject may be at once dismissed with the remark that Balfour does not believe it possible to diagnosticate fatty heart. We are glad to find he believes that angina pectoris is not necessarily dependent upon disease of the heart or aorta. It is time that this view should meet with general acceptance, for the too-common belief that an attack of angina indicates cardiac disease is not only absurd, but is fraught with too much of evil consequence. He agrees with Romberg in his opinion that the affection is a neuralgia of the cardiac plexus. As to its predisposing cause, he advances the original and plausible opinion that it is due to anæmia, general or local in origin, of the cardiac plexus. Its exciting cause, he thinks, is something which still further cuts off the blood supply, or in some other mode injuriously influences the cardiac nerves. Fatty, flabby heart is obviously not a cause, but, like the predisposition to angina, merely a result of defective blood-supply. Some years ago, Nothnagel (*Schmidt's Jahrbücher*, 1867, ii. Band) gave to angina pectoris the term "angina pectoris vaso-motorea;" and recently Fothergill (*Phila. Med. Times*, 1876) has said: "We now understand this disease—it is vasomotor spasm." Of this theory, however, Balfour says nothing; but coincides with Anstie's opinion that angina pectoris is a form of inhibitory paralysis of the heart. We must say that this opinion does not seem by any means to cover the symptoms of this painful affection. In his vivid portrayal of the symptoms he does not mention the loss of the left radial pulse during an attack. This curious symptom was, we believe, first recorded in a paper on angina pectoris in this Journal for October, 1875. While Anstie deems chloroform a very dangerous remedy, Balfour amazes us by saying that "so far from being unsafe in cardiac diseases, it is often of greatest use in angina pectoris. It not only relieves pain, but regulates the circulation; now and then bringing back the pulse to the wrist, whence it had apparently fled forever." He has very often used nitrite of amyl, but finds that his patients prefer chloroform, and it is his usual remedy. "It acts more quickly, as effectually, and *is perfectly safe!*" If so arranged as to be inhaled only in small doses, "*it is not even necessary for a medical man to administer it!*" The American reader will here doubt the soundness of Balfour's judgment. His success in this use of chloroform is only a remarkable coincidence. We fervently trust his example will not be followed. He is undoubtedly more correct in his statement that there is no better prophylactic tonic against cardiac neuralgia than arsenic, which he gives in the form of Fowler's sol. in five-drop doses t. d.; also iron, if necessary.

Lecture XIII. contains valuable advice relative to the diagnosis and treatment of "peri- and myocarditis and cardiac hypertrophy apart from valvular diseases." Rheumatic pericarditis appears to be a remarkably rare affection in Edinburgh. In addition to other sensible remedies, Balfour recommends milk diet. He makes these characteristic remarks: "The treatment of pericarditis almost invariably merges into the treatment of some other disease; and I see no reason why, because the pericardium becomes accidentally affected, we ought therefore to change our treatment and let loose the dogs of war. Rheumatic pericarditis is a disease which will run its course favourably the less it is interfered with. What is required is local palliatives and constitutional treatment, which must be directed, not to the pericarditis itself, but to the disease with which it is associated." In all ordinary cases he believes it to be unnecessary to tap the pericardium.

In regard to hypertrophy apart from valvular disease, Balfour states that almost all his cases of excited action with hypertrophy and without valvular affection, have either had a distinct syphilitic history or have yielded to anti-syphilitic treatment. In these cases digitalis is to be avoided, and is always injurious. The iodide of potassium is the only effectual remedy.

Lecture XIV. is confined to cardiac therapeutics. It is an excellent lecture, packed full with good things which it would be difficult to find elsewhere. Digitalis is *par excellence* the favourite remedy, even in cases of aortic regurgitation and stenosis, in which by many writers the drug has been considered dangerous. Indeed, Balfour says: "Aortic regurgitation is the one disease in which its use requires to be most freely pushed, because we desire to produce firm contraction of the apex and diminution of the ventricular cavity, the commencement therefore of its poisonous action. But for this very reason we must watch its use most carefully in this disease, and pretermit its use at once on the slightest indication of over-action. In measuring the tendency to over-contraction, the most sensitive test we have is the amount of urine passed." To this we have already referred. Alluding to the common belief in its cumulative action, he asserts that in merely tonic doses digitalis may for years be safely given. As to its dangerous effect upon fatty hearts, he says, first: "It is impossible to diagnosticate a fatty heart;" and, secondly: "We must not be driven from the employment of digitalis by any theoretical hypothesis;" and he supports his assertion by citing cases in which the remedy did only good. As before remarked, he relies only upon the tincture, and in proper cases gives it in half drachm doses, the ordinary dose being ten drops t. d. "Ergot," says Balfour, "I have never found of the slightest use." Next to digitalis he considers arsenic our most valuable remedy: "its effect in removing pain of anginous character is really marvellous, and it has an important tonic effect upon the cardiac muscle." Nitrite of amyl and chloroform, also iodide of potassium, his remedy in syphilitic hypertrophy, have already been mentioned. *Rest* is emphatically recommended, to be followed by exercise so soon as the heart has in some measure regained its power. Most cases of cardiac dropsy may be left to digitalis, which may sometimes be combined with squill. In ascites, Balfour prefers tapping to purgatives; but when the patient objects to the trocar, he uses elaterium and croton oil alone or in combination. After tapping or purging, he finds no diuretic so useful as copaiba or raw onions—if the patient will only eat enough of them; digitalis being always indispensable.

Lecture XV. treats of malposition of the aorta due to rickets and simulating aneurism. In this chapter Balfour's shrewdness and skill as a diagnostician are eminently shown in cases which illustrate the subject. The differential diagnosis between malposition of the aorta (in which a pulsating tumour simulates aneurism) and true aneurism is made beautifully clear. "Whenever over any abnormal pulsation we have marked accentuation of any abnormal, but especially of the normal, particularly the second sound, we must be suspicious of the existence of a sacculated aneurism, and that even though rickety malformation of the chest be present. To make our diagnosis certain, however, we must be able not only to connect the pulsation directly with the aorta, but to show also that the dulness subtended by that pulsating body occupies a space greater than would be the case were the pulsation due to a simple cylindrical vessel such as the aorta." These, together with evidences of pressure upon one or more neighbouring organs, are the signs upon which he relies in diagnosis of an aneurism. We find fresh and solid information in Lecture XVI. "on the diagnosis of aortic aneurism." One of the first points which strikes us is the assertion that "Aneurismal pulsations are usually more forcible than those of the heart." This is a symptom upon which Balfour lays greatest weight, which he considers almost pathognomonic, and which he claims he was the first to bring to the notice of the profession as an important sign. Among other symptoms of aneurism, dyspnœa, dysphagia, pain, pressure upon the bloodvessels are discussed most edifyingly. But in his reference to the aneurismal differences between the radial pulses, he makes no mention of the effect of aneurism in the descending portion of the aorta upon the arterial pulses of the feet. While he does not regard pain in thoracic aneurism as a distinctive sign, or more than a valuable warning, in obscure cases of abdominal aneurism Balfour considers severe neuralgic pain, which sometimes affects the bowels, at others passes along the spine into the extremities, and otherwise unaccountable, as a distinctive symptom. The variation and unexplainable disappearance of the pain for months at a time he thinks to a certain extent confirmatory of the diagnosis of aneurism. He runs through the various forms of treatment, and finally discards them all for iodide of potassium, the use and brilliant results of which he describes in Lecture XVII. With the exception of Tufnell's plan of perfect rest, and his own treatment by the iodide, he pronounces all modes of treatment as attended with risk or danger. He does not attempt to explain the action of the iodide; he confesses that this treatment has been based entirely upon empirical observation, and claims that it is, therefore, free from speculative ideas. It relieves pain and causes the formation of solid clots in the aneurismal sac. In some cases it irritated the stomach, brought on diarrhœa, and caused other unpleasant effects; but in nearly all he was able to return to it without renewal of the contraindication, and continue its use for months. He often gives three half-drachm doses daily. This treatment is profusely illustrated by cases in which results, aided by the recumbent position, were certainly remarkable. Balfour does not claim that aneurism can be cured by this remedy, or by anything else; but says: "I am perfectly certain that, at the present day, we possess no other remedial agent or mode of treatment which so surely gives relief or so frequently prolongs life as the iodide of potassium. While, therefore, I freely acknowledge the importance of recumbency, as insisted upon by Tufnell, and even admit the possible utility of limited diet within reasonable bounds, I claim for the iodide that it is capable of relieving aneurism in a most remarkable manner without any other treatment whatever, though its success may be promoted by such treatment."

Balfour's style is generally very clear and enjoyable, yet we occasionally find sentences half a page long, wheels within wheels, which are somewhat confusing; and here and there English which is actually bad. In common with other medical writers of Great Britain, he uses the term "diagnose," which offends the eye as sorely as a word misspelled. Worcester does not give the word "diagnose." Webster sets it down as "rare;" and rare it ought to be, for it is neither euphonious nor correct, diagnosticate being alone allowable in elegant English. He has made a serious and vexatious mistake in not heading his pages with the subjects of the various lectures. One is therefore obliged to turn without cessation to the index. This is annoying. If, too, Balfour had followed the example of Von Dusch by indicating the subject of every paragraph in the margin of the page, his book could be read with much greater convenience. It is handsomely printed, and, as a whole, especially in matter, is one of the best treatises we have ever read; and, if we were asked to recommend a work on cardiac disease, we should most decidedly say read Balfour. H. O.

ART. XXII.—*The Practitioner's Handbook of Treatment; or, The Principles of Therapeutics.* By J. MILNER FOTHERGILL, M.D., Member of the Royal College of Physicians of London; Assistant Physician to the City of London Hospital for Diseases of the Chest, Victoria Park; Assistant Physician to West London Hospital. 8vo. pp. 575. Philadelphia: Henry C. Lea, 1877.

EVERY art or science in process of evolution passes through certain well-defined stages of existence. The data upon which each one is founded are